

A NEW SWERTIA FROM COLORADO

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In 1947 and 1948 several collections of a species of *Swertia* were made in Las Animas and Baca counties in the southeastern corner of Colorado. Study of these specimens shows them to represent a new species.

The plant is found on gently sloping sandstone outcrops and is frequent to common over small areas in several localities. The stations for the new species lie somewhat outside of the range of the genus as delineated in recent revisions of the group (Card, 1931, St. John 1941), the nearest members, geographically, being those found along the eastern slope of the Rocky Mountains about fifty miles to the west. The present species grows at an elevation of 5000 to 5500 feet and is associated with plants which are, by and large, prairie and foothill species, such as *Arenaria Hookeri* Nutt., *Paronychia Jamesii* T. & G., *Astragalus crassicaarpus* Torr., *Astragalus gracilis* Nutt., *Gilia spicata* Nutt., *Comandra pallida* A. DC., *Brauneria angustifolia* (DC.) Heller, *Chrysoopsis villosa* (Pursh) Nutt., and *Palafoxia macrolepis* (Rydb.) Cory, the last named also having apparently a rather local distribution.

The affinities of the new species lie with that portion of the genus formerly included in the genus *Frasera*, more distinctly with those species segregated as *Leucocraspedum* by Rydberg. It resembles the Californian species *Swertia puberulenta* (Davidson) Jepson in a number of characters and runs to that species in the latest key (St. John, 1941). Some differences between these two species are:

Swertia puberulenta

Inflorescence a thyriform cyme; peduncles clustered. Basal leaves oblanceolate to obovate, 5–10 cm. long, 1–5 cm. broad; cauline leaves narrowly elliptical, 3–5 cm. long, 1.5 cm. broad. Calyx longer or even twice as long as the corolla; calyx lobes 10–15 mm. long, corolla lobes 7 mm. long.

Swertia coloradensis

Inflorescence a corymbose cyme; peduncles opposite. Basal leaves narrowly oblanceolate, (4) 8–10 cm. long, 1 cm. broad; cauline leaves linear-oblanceolate, 4–8 cm. long, 0.6–0.9 cm. broad. Calyx and corolla of nearly equal length; calyx lobes mostly 8.5–10 mm. long, corolla lobes mostly 9 mm. long.

Swertia coloradensis sp. nov. Herba perennis, glanduloso-puberulenta; radice lignosa; caulibus pluribus, 15–20 cm. altis, cymis corymbosis; foliis oppositis, albo-marginatis, infimis lineari-oblanceolatis, (4) 8–10 cm. longis, 1 cm. latis, foliis superioribus lineari-oblanceolatis, 4–8 cm. longis, 0.6–0.9 cm. latis; bracteis

lineari-lanceolatis vel linearibus; pedicellis 8–12 mm. longis; floribus 4-partitis, lobis calycis lineari-lanceolatis 8.5–10 mm. longis, 1.25–1.5 mm. latis; corollis pallide luteolis vel albidis, intus purpureo-punctatis, lobis corollae obovatis, 7.5–9.5 mm. longis, 3–3.5 mm. latis; foveis ellipticis, 1.3 mm. latis, 1 mm. altis, margine fimbriatis, sacculis sagittatis, 0.8 mm. descendenti-bus; filamentis 5 mm. longis, antheris 2 mm. longis, 1.3 mm. latis; coronis fimbriatis, 1 mm. altis; stylis tenuibus, 3–4 mm. longis; capsulis glabris, coriaceis, modo septo parallelo compressis, ovoideis, 5–7 mm. longis, 3–3.5 mm. latis, seminibus 4, fusco-purpureis, rugulosis, 4–4.75 mm. longis.

Perennial herb with a woody taproot; stems several, 15–20 cm. high; inflorescence a corymbose cyme; leaves and floral bracts opposite, all but the uppermost distinctly white-margined; stems and leaves glandular-puberulent; stems 2.5 mm. in diam. at base, tapering upward to 0.5 mm. below the terminal flowers, first 2–4 internodes 2 mm. or less in length, those of lower and middle stem 20–30 mm. long, gradually decreasing into the inflorescence; lowermost pair of leaves sometimes bladeless, other basal leaves (4) 8–10 cm. long, 1 cm. wide, narrowly oblanceolate, obtuse or acute at the apex, narrowed to a winged petiole, cauline leaves linear oblanceolate, 4–8 cm. long, 0.6–0.9 cm. wide, floral bracts gradually reduced, the uppermost narrowly linear-lanceolate to linear, 1–1.5 cm. long, 1.5–3 mm. wide; pedicels 5–15 mm. long, pubescence similar to that of the stem; calyx of 4 slightly unequal linear-lanceolate sepals, 7.5–12.5 mm., mostly 8.5–10 mm. long, 1.25–1.5 mm. wide, narrowed to a sharp point, glabrous or with scattered hairs on the midrib below; corolla of 4 obovate petals 7.5–9.5 mm., mostly 9 mm. long, 3–3.5 mm. wide, tapering abruptly to a short mucro, pale yellowish or whitish, conspicuously purple dotted inside; foveae 2.5 mm. from the base of petals, broadly elliptic, or slightly flattened on the lower side, 1 mm. high, 1.3 mm. wide, extending downward 0.8 mm. into a flat sagittate pouch, margin fimbriate, with narrow divisions ca. 0.5 mm. long; stamens 4, alternate with petals, glabrous, filaments 5 mm. long, slender, slightly broadened near the base, anthers 2 mm. long, 1.3 mm. wide; crown 1 mm. or less high, fimbriate; style slender, 3–4 mm. long, stigmas 2, flabelliform, ca. 0.25 mm. long; fruit glabrous, coriaceous, 2-valved, flattened parallel to the septum, ovoid, 5–7 mm. long, 3–3.5 mm. wide; ovules and seeds 4, 3-angled, 4–4.75 mm. long, rugulose, brownish purple.

Type. Rocky slope, 9 miles east of Troy, near the Baca County line, Las Animas County, Colorado, June 29, 1948, *Rogers 6110* (Herb. Univ. Mich.; isotypes distributed to several herbaria).

Additional specimens examined. Six miles south of Utleyville, Baca County, Colorado, September 8, 1948, *Rogers 6423*

(description of fruit from this collection); 2.5 miles west and 2 miles north of Andrix, Las Animas County, Colorado, July 20, 1947, *Rogers 4951*; 8 miles northeast of Kim, Las Animas County, Colorado, May 31, 1948, *Rogers 5840*. (The first set of each of the above collections is deposited in the Herbarium of the University of Michigan.)

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LITERATURE CITED

- CARD, H. H. 1931. A Revision of the Genus *Frasera*. Ann. Mo. Bot. Gard. 18: 245-282.
 ST. JOHN, HAROLD. 1941. Revision of the Genus *Swertia* (Gentianaceae) of the Americas and the Reduction of *Frasera*. Am. Midland Nat. 26: 1-29.

STUDIES IN WESTERN VIOLETS, VI

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The largest number of *Viola* species in the western part of the United States belong to the *Chamaemelanium* section, most species of which have yellow or yellowish flowers. The largest group of these is the *Nuttallianae*, which contains two large species complexes, the *Viola purpurea* and the *V. Nuttallii* complexes. Each of these groups has representatives over most of the western United States, where they occupy numerous ecological niches. The more versatile of the two is the *V. purpurea* group, which occurs from near the coast of the Pacific to nearly 11,000 feet altitude in the mountains and also across the ranges and flats of the arid Great Basin.

Three species are recognized in the *V. purpurea* complex: *V. quercetorum* Baker and Clausen of the Coast Ranges and foothills of California and adjacent Oregon; *V. purpurea* Kell., with 8 subspecies occupying ecologically very different niches in the Sierra Nevada and the Great Basin; and *V. aurea* Kell., with 3 subspecies in the Great Basin. A more remote relative of the *V. purpurea* complex is *V. pedunculata* Torr. and Gray of the California Coast Ranges, with two subspecies.

The *Viola Nuttallii* complex contains the following species: *V. Nuttallii* Pursh, *V. vallicola* A. Nels., *V. Bakeri* Greene, with two, and *V. praemorsa* Dougl., with five subspecies. More remotely related are the rare endemics, *V. tomentosa* Baker and Clausen, *V. charlestonensis* Baker and Clausen, and *V. utahensis* Baker and Clausen.

The present paper treats the subspecies of *V. purpurea* and *V. pedunculata* and proposes two new combinations in *V. praemorsa*. A forthcoming paper will cover the remaining units of the *Nuttallianae*.